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407



SELECTION AND CARE

LEAFLET NO. 407

U. S. DEPARTMENT OF AGRICULTURE

Dwarf Fruit Trees.



SELECTION AND CARE

Dwarf fruit trees are developed in the nursery to meet a demand for trees that require less growing space than those of standard size.

Dwarf apple and pear trees are widely available. The selection of varieties is much greater in apples than in pears. Peach, plum, cherry, apricot, and nectarine trees have not been produced extensively as dwarfs. Little is known of their performance when put on dwarfing roots. The standard trees of these stone fruits (except sweet cherries) are small in comparison with standard apple trees and can be restricted in size by pruning.

Dwarfs begin to bear earlier than standard trees. Dwarfing does not affect the size or quality of the fruit.

DWARFING METHODS

Nurserymen put considerably more work into developing dwarfs than into growing standard trees. They produce standard trees by planting seeds, growing fruit seedlings, and budding or grafting the seedlings to a desired variety. For example, they grow an apple seedling and bud or graft it to the McIntosh apple variety, or they grow a pear seedling and bud or graft it to the Seckel pear variety.

Two methods are in use for producing dwarf fruits. One method is to bud or graft the tree to the root of a small-growing fruit variety, such as Doucin or Paradise apple. Another is to graft a piece of stem of a small-growing fruit tree between the root and the top of the tree to be dwarfed.

Roots, or so-called rootstocks, are used to dwarf all kinds of fruit trees. Stems, also known as interstems or intergrafts, are used at present only for dwarfing apple trees.

ROOTSTOCKS AND INTERGRAFTS

Apples

Rootstocks have been investigated more thoroughly for apples than for other fruits. The East Malling Fruit Research Station, East Malling, Kent, England, has done outstanding research in this field. They have developed a series of rootstocks that give different degrees of dwarfing for apple trees. The rootstocks are classified as very, or full, dwarfing, which produce very small trees, and semidwarfing, which produce trees intermediate in size between full dwarf and standard tree.

A tree is identified at the nursery



A tree propagated for dwarfing by use of an interstem piece. The root is a seedling first budded to East Malling VII, then to Golden Delicious.

by the variety and the East Malling Roman numeral assigned to the rootstock on which the tree is grown.

Malling IX has been widely tested in this country and is the best of the full-dwarfing stocks. Trees grow 6 to 8 feet high in 20 years if they are planted in strong soil and given good care. A tree produces up to a bushel of apples a year.

Malling VIII is a less satisfac-

tory full-dwarfing root than Malling IX.

Malling VII produces trees a little larger than the standard peach tree. Malling II gives larger trees than Malling VII. Full-bearing trees from both these semidwarfing stocks may produce 5 or more bushels of apples.

Trees dwarfed by the intergraft method are not classified and are identified at the nursery as interstem or intergraft trees. Stems produced from the Malling VIII rootstock are widely used by nurserymen as the interstem piece. The degree of dwarfing apparently increases with the length of interstem used.

Pears

Pear trees are dwarfed by using the Angers quince root. Some varieties, including the popular Bartlett, do not unite well with quince. A compatible variety, such as Beurre Hardy, is first worked on the quince. The desired variety is then budded to the Beurre Hardy. Trees about half the size of standard pear trees are produced.

USES OF DWARFS

Dwarf fruit trees are desirable where growing space is limited and labor cost for hand work relatively low. They are used extensively for commercial fruit production in northern Europe, where such work as spraying, fruit thinning, pruning, and picking is done by hand. There is little room for equipment between close-planted dwarfs.



Propagation bed of East Malling II rootstocks.

Commercial Grower

Full dwarfs have these disadvantages in commercial fruit production as carried on in the United States:

(1) It costs more to start an orchard with dwarfs than with standard trees. The cost of a dwarf at the nursery is usually at least twice the cost of a standard tree. A grower must plant more dwarfs than standard trees per acre to get yields that pay.

(2) The grower cannot employ large power machines in cultivation, spraying, and other orchard work.

(3) Rootstock dwarfs are much less firmly anchored in the soil than standard trees. They may require permanent support with stakes or wires to keep them from blowing down in high winds. Intergraft dwarfs grow without need of support, according to nurserymen.

Some orchardists in this country

are planting semidwarf apples because they want smaller trees. Others use them as filler trees, particularly in orchards planted with late-bearing apple varieties. The dwarfs are planted between standard trees, left in about 15 years, and then removed. Yield from the dwarfs increases production during the early life of an orchard.

Home Grower

As compared with standard fruit trees, dwarfs offer these advantages to the small-scale home grower:

(1) They usually begin to bear 1 or 2 years earlier.

(2) Several varieties of fruit with different seasons (times of the year) for ripening can be planted in the space required for a standard tree.

(3) All the work around dwarfs can be done without the need for orchard machinery.

(4) Dwarfs can be pruned and trained as ornamentals in landscaping—on wires or trellises, against walls, or along a walk or drive.

PLANTING AND CARE

Dwarf fruit trees are usually a year old when you buy them at the nursery. They may be single stems or may have 2 or 3 branches along the main stem.

Planting

Plant in early spring if you live where winters are severe; in late fall or early spring if you live in a warmer climate.

Place full-dwarf apple trees 10 to 12 feet apart each way, or 6 to 8 feet apart in rows with 15 feet between them. Place semidwarf apple trees about 20 feet apart each way. Place dwarf pear trees 15 to 18 feet apart.

For best results, dwarfs should be planted in soil that is moderately



Golden Delicious apple on East Malling VII rootstock at 10 years of age.



McIntosh apple on East Malling VII rootstock at 10 years of age.

open and well drained—not in fine-textured clay or in soil so coarse that it does not retain moisture.

Pack good topsoil firmly around the roots. Don't use fertilizer around the roots at planting.

Plant dwarfs at the depth at which they stood in the nursery row, or a little higher. You can see the point where rootstock dwarfs unite with the fruit variety. At this point you can see a change in color of bark and often a slight curve in the trunk. Be sure the union is aboveground.

Fertilizing

After trees start to grow in early spring, scatter about each tree, from the trunk out, 1 or 2 pounds of garden fertilizer fairly high in nitrogen. Use increasing amounts each year in late fall or early spring.

Mulching

Mulching is an excellent practice for growing dwarf or other fruit trees. Mulch with straw, grass clippings, or other organic material. Mulch deep enough around each tree to smother grass and weeds. Keep mulch a little away from the trunk and hoe the ground immediately around the tree. You will avoid attracting mice by keeping mulch away from the tree. Mice and rabbits damage trees by eating the bark and girdling the roots.

If trees are not mulched, they should be hand cultivated to keep down weed or grass growth within 3 to 4 feet of the trunk.

Pruning and Training

When you set out dwarfs, prune them back to keep the top in balance

with the roots. A loss of roots always occurs in transplanting. If the trees are single stems 3 to 4 feet high, prune them back to about 30 inches. Generally, no further pruning is needed during the first year.

At the beginning of the second year of growth, select 4 or 5 well-spaced branches that you want to keep on each tree and remove the rest. Trees to be grown as natural bushes need no further pruning except to thin out branches.

If you are training a tree on a trellis or wall, fasten branches to wires or the wall during the first year. Remove new branches that form and grow upright; cut them to short stubs. This encourages spur-type growth.

Spraying

Protect your trees against diseases and insect pests. Apply fungicide and insecticide sprays several times each season. Your county agent or State agricultural experi-

ment station has information on the time to spray and the materials to use.

Fruit Thinning

Thin out excess fruits by picking off the small fruits. An excess is anything more than 1 fruit for each 6 to 8 inches along a branch. Thin within 20 days after trees start to bloom.

If the fruit is not thinned, dwarfs may set more fruit than they can carry and develop to good size and quality. If the trees bear excess fruit, they may not bloom the next year.

APPLE AND PEAR VARIETIES

Choose varieties developed for your locality and tested and recommended by your State agricultural experiment station. Those that grow well as standard trees may also be grown as dwarfs. Dwarf



McIntosh apple on East Malling IX rootstock at 10 years of age.

fruit trees, regardless of variety, are not recommended for extremely cold areas such as the northern Great Plains.

Provide cross-pollination for apples and pears by planting two or more varieties of the same fruit. The Stayman, Gravenstein, and Rhode Island Greening apple varieties are poor pollinizers. Be sure to plant at least two other kinds if you choose one of them.

Apples

Well-adapted apple varieties include the following:

Northern States. — McIntosh, Northern Spy, Rhode Island Greening, and Wealthy.

Southern and Middle States. — Delicious, Golden Delicious, Stayman Winesap, and Jonathan.

Anywhere. — Lodi, Yellow Transparent, Early McIntosh, and Gravenstein.

Pears

Only pear varieties resistant to fire blight, a disease, are recommended for planting east of the

Rocky Mountains. They include: Seckel, small, sweet, high quality; Kieffer, large, poor quality; Waite, fair quality, good for cooking or canning; and Orient, rather poor quality but useful in the southern part of the country.

The Bartlett is highly susceptible to fire blight. It may be grown in only a few eastern locations, such as near the Great Lakes, where it is cool in spring and fire blight is less severe.

Better quality pear varieties, including Anjou, Bartlett, and Bosc, may be grown as dwarfs west of the Rocky Mountains.

OTHER PUBLICATIONS

Other publications on selection, planting, and care of fruit trees, including dwarfs, may be obtained from the U. S. Department of Agriculture, Washington 25, D. C. Among them are: Establishing and Managing Young Apple Orchards (Farmers' Bulletin 1897); Bridge Grafting (Farmers' Bulletin 1369); and Pruning Hardy Fruit Plants (Farmers' Bulletin 1870).

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